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Notes on the butterflies of the Langkawi Islands,
north-western extremity of Malaysia,
with descriptions of new subspecies

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The Langkawi Islands, a group of about 70 islands off the coast of Kedah, Malaysia, belong to the specialized area known by the name of "Kedawi" (CORBET, 1941a) in the distribution of butterflies. In this area occurs considerable number of species or distinct races that are not otherwise found in Malaysia. There is a strong infiltration of Burmese butterflies that have not passed the Malaysian climate barrier.

For this reason English Entomologists paid special attention to the Islands and extensive collections of the butterflies in all larger islands were made by themselves or by their co-operators in the past. Such collections were examined by A. S. CORBET and H. M. PENDLEBURY, and their studies were finished up in their fine works, "The Butterflies of the Malay Peninsula" (1956). In this publication 326 species were listed up with 42 forms distinct from those found in Malaya proper.

In May, 1966, I visited the Langkawi Islands and spent several days in observing or collecting butterflies in Main Island. Though my visit was short and limited one, I could fortunately find a certain number of species to add to the butterfly fauna of the Islands.

These butterflies are treated in Part I except for the species belonging to the genus *Arhopala*. They are omitted in view of uncertainty in identification.

Incidentally I could find a couple of species which could better be treated as new distinct races. They are treated in Part II as new subspecies.

Besides, many species could be considered to be in the way of insular specialization though I do not take up them here. All the butterflies were captured by me in the Langkawi Main Island.

In compiling this paper I acknowledge my heartfelt thanks to Dr. TAKASHI SHIRÔZU for his valuable advices. I am also thankful for the assistance extended to me by Mr. KEI SANO, Malayawata Steel Ltd., in execution of the journey to the Langkawi Islands.

Part I Species new to the Langkawi Islands

*1. *Leptosia nina nina* FABRICIUS (fig. 1, ♂)

♂♀, North Coast, 13 May 1966.

Flies near human habitations. It seems probable that the species is a recent introduction. Langkawi forms differ from ssp. *malayana* of Malaya proper and Singapore in larger subapical black spot and more irregular apical margin, being inseparable from the nominate race from Chun Pon, South Thailand.

2. *Thaumantis klugius lucipor* WESTWOOD (fig. 2, ♀)

♀, North Coast, 12 May 1966.

Obtained in the dark forest path late in the afternoon. This is the first record of the genus *Thaumantis* in the Islands.

3. *Terinos terpander robertsia* BUTLER (fig. 3, ♂)

♂, North Coast, 12 May 1966.

4. *Terinos clarissa malayana* FRUHSTORFER (fig. 4, ♂)

♂, North Coast, 12 May 1966.

This single male differs from Malayan specimens in brighter orange yellow area and clearer dark purple lunules in it on the upperside.

Here I keep it provisionally under *malayana*.

*5. *Rhinopalpa polynice birmana* FRUHSTORFER (fig. 5, ♀)

♀, North Coast, 12 May 1966.

Obtained single female flying somewhat like faded *Cirrochroa* species around the forest edge. Very narrow black terminal border traversed by orange yellow stripe indicates its affinity with Burmese race.

6. *Neptis nata cresina* FRUHSTORFER (fig. 6, ♀)

2 ♀♀, North Coast, 10 May 1966 and 12 May 1966.

Inseparable from specimens from Malaya Proper.

7. *Parathyma nefte subrata* MOORE (fig. 7, ♀)

♀, North Coast, 10 May 1966.

Single female belongs to form *neftina*.

*8. *Euthalia adonia beata* FRUHSTORFER (fig. 8, ♀)

2 ♀♀, West Coast, 11 May 1966.

Obtained at flowers of shrubs in the forest. Distally pointed or notched white spots of the forewing and the regular shape of median band on the hindwing indicates its affinity with Siamese race, *beata*, rather than Malayan *pinwilli*.

9. *Polyura schreiberi tisamenus* FRUHSTORFER (fig. 9, ♀)

♀, North Coast, 10 May 1966.

Obtained near the stream in the dense forest. This species is the second *Polyura* on the Islands. Only *P. athamas* had been found in the Islands.

10. *Abisara savitri savitri* C. & R. FELDER (fig. 10, ♀)

2 ♂♂, North Coast, 10 May 1966; North Coast, 12 May 1966; ♀, North Coast, 10 May 1966.

Found in dense forests. I have never met with this species in Malaya proper. MORRELL states that this butterfly is fairly common in Singapore, but rare elsewhere in Malaya.

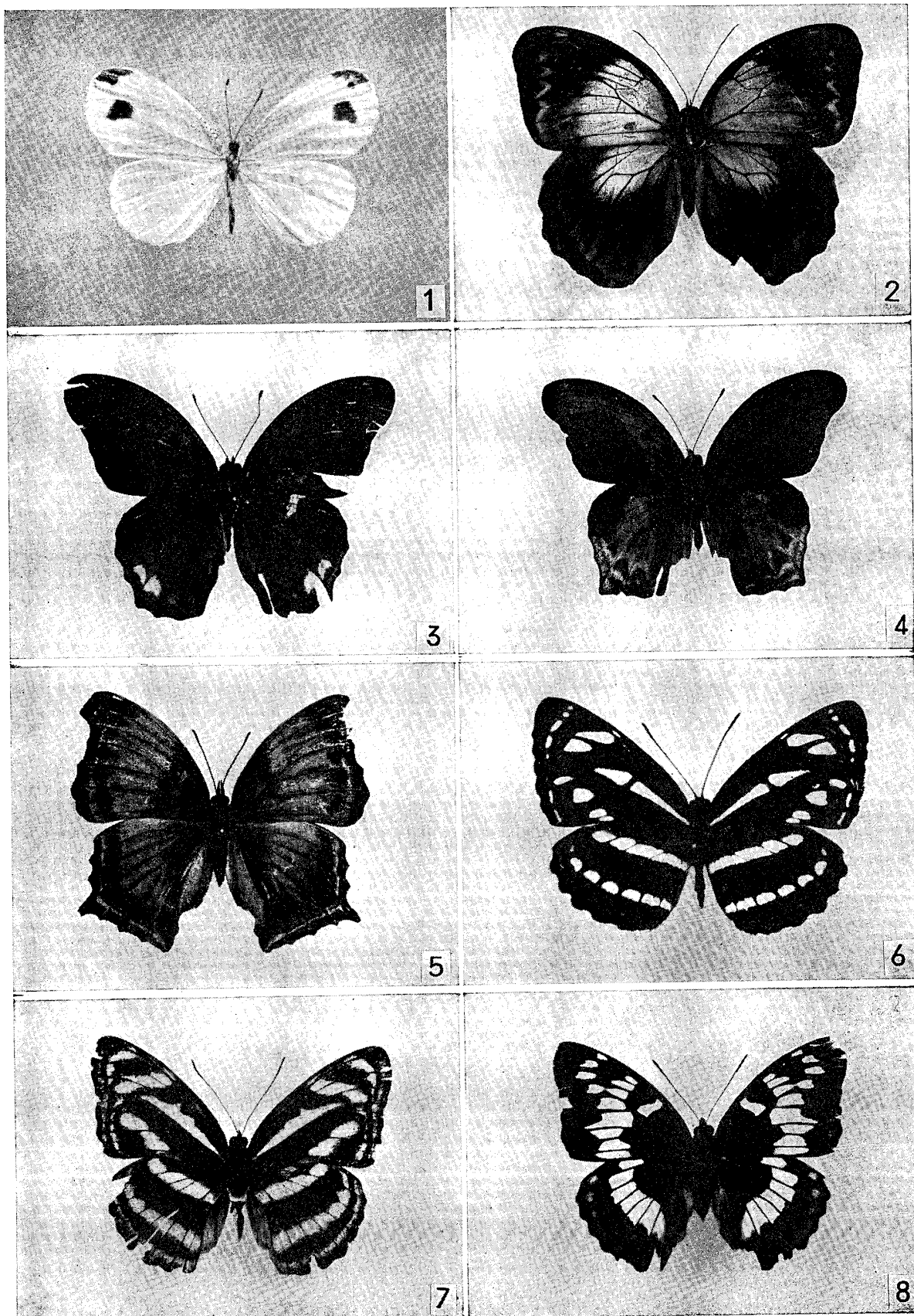
11. *Curetis tagalica japa* FRUHSTORFER (fig. 11, ♂)

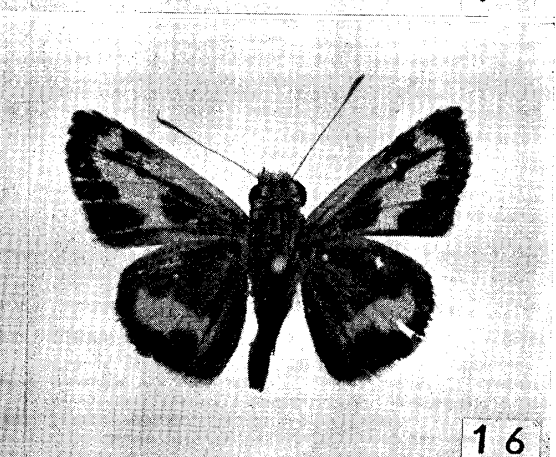
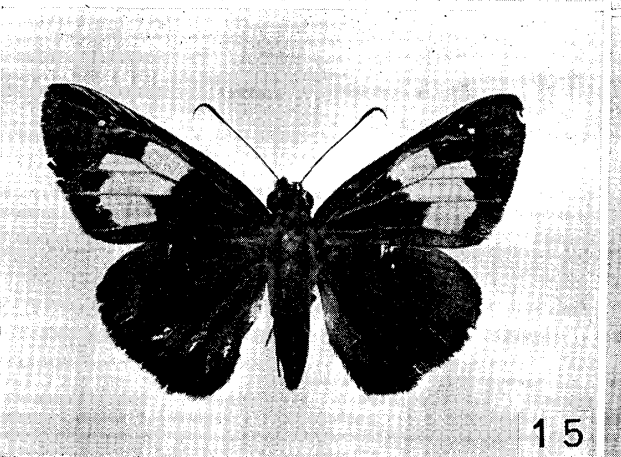
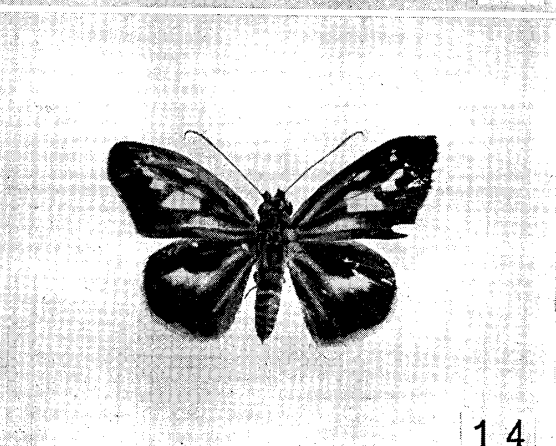
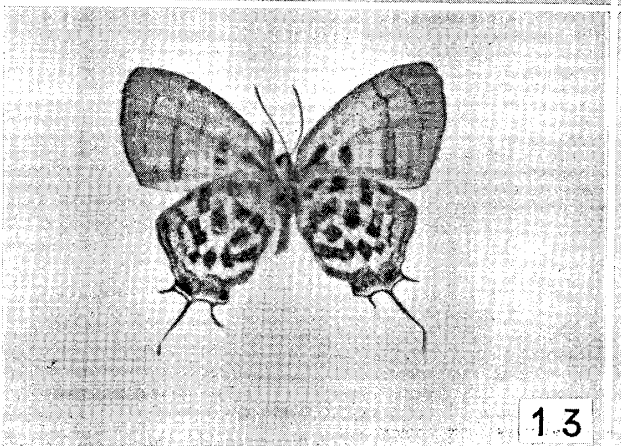
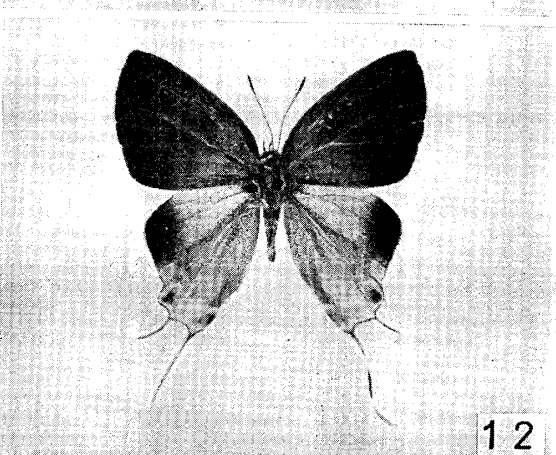
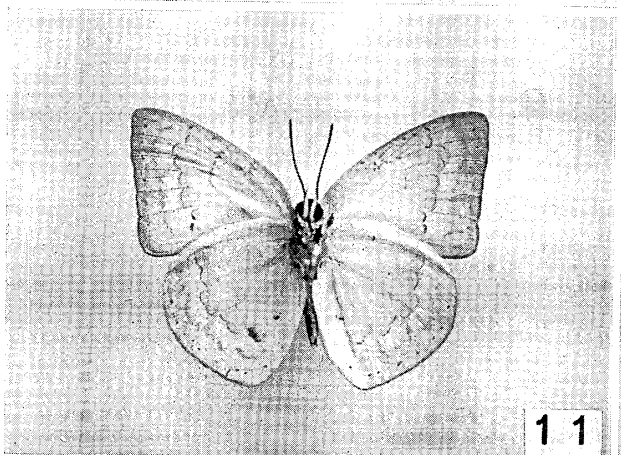
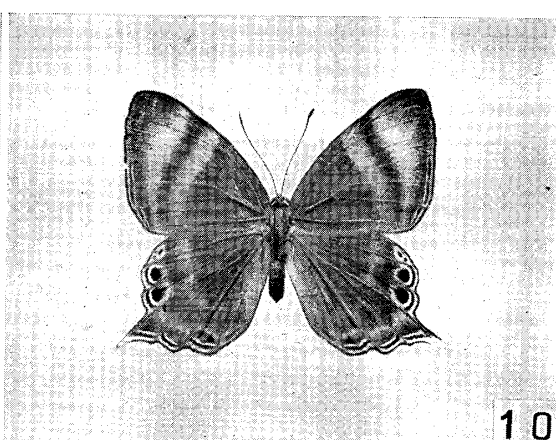
♂, North Coast, 12 May 1966.

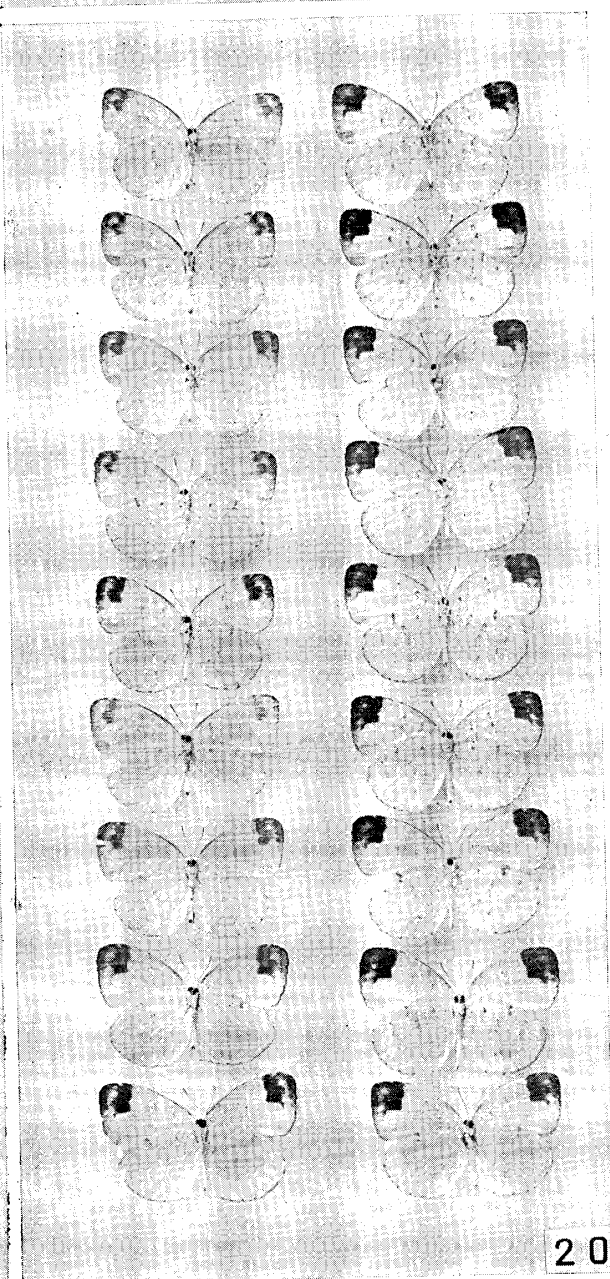
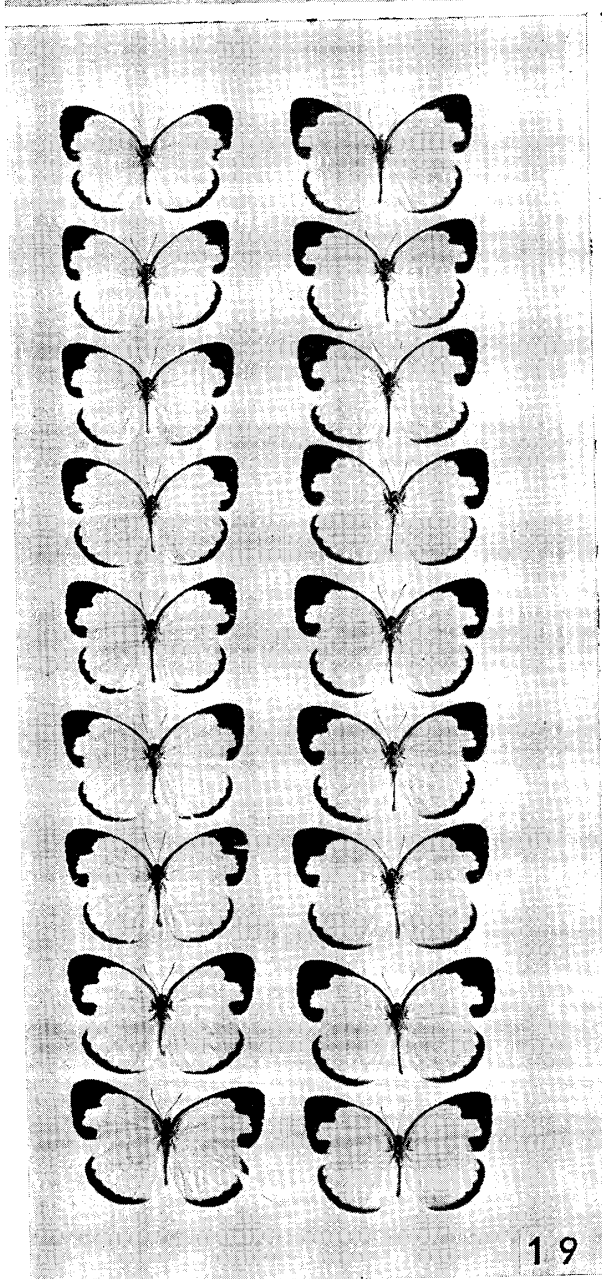
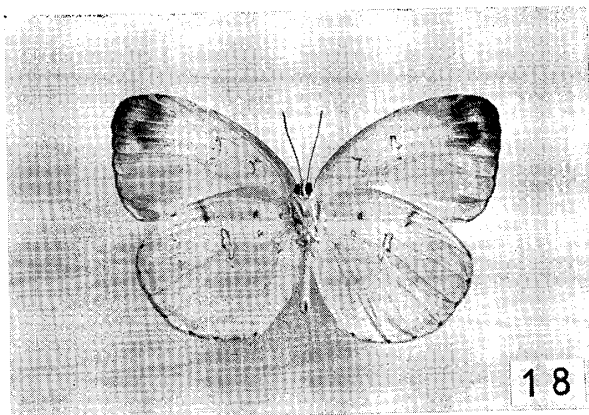
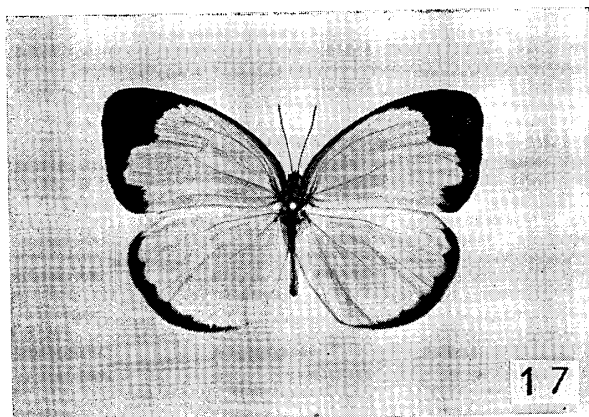
After *C. bulis*, *C. sperthis* and *C. insularis*, the species is the fourth *Curetis* found on the Islands. It is rather curious that *C. santana*, commonest species in Malaya proper has not been found in the Islands.

12. *Zeltis amasa maximinianus* FRUHSTORFER (fig. 12, ♂)

3 ♂♂, North Coast, 10 May 1966; North Coast, 12 May 1966.







Found commonly on roadsides in the forest. Inseparable from Malayan race.

13. *Marmessus rufotaenia rufotaenia* FRUHSTORFER (fig. 13, ♀)

2♀♀, North Coast, 12 May 1966.

Obtained on a flowering shrub in the forest. These females are the first record of this species in Malaysia. Hitherto, *M. rufotaenia* has been found in South Burma, Sumatra, Singapore and Java.

14. *Plastingia latoia latoia* HEWITSON (fig. 14, ♀)

♀, North Coast, 12 May 1966.

Plastingia helena, *P. tavoyana* and *P. fuscicornis* have been found on the Islands till now.

15. *Erionota harmachis harmachis* HEWITSON (fig. 15, ♀)

♀, North Coast, 13 May 1966.

Caught on the forest road in considerable rainfall. This species is distributed in Neomalaya and very rare. The male is still unknown.

16. *Oriens gola pseudolus* MABILLE (fig. 16, ♂)

♂, North Coast, 13 May 1966.

Hitherto, only *Oriens paragola* has been recorded on the Islands. The single male differs from the specimens from Malaya proper in broader orange-yellow post-discal band, being very similar to the sex caught at Chun Pon, South Thailand.

Remarks: Asterisk mark indicates the subspecies distinct from those in Malaya proper.

Part II Descriptions of new subspecies

1. *Eurema simulatrix littorea*, ssp. nov. (figs. 17, 18, Holotype ♂; figs. 19, 20, left row, Paratypes ♂♂) (figs. 19, 20, right row, ssp. *tecnessa* ♂♂ from Malaya proper and Perlis, "Kedawi" for comparison)

♂, This new subspecies is similar to Neomalayan race, *Eurema simulatrix tecnessa* (figs. 19, 20, right) on the upperside, but the subspecies differs from *tecnessa* on the underside as follows:

- 1) Forewing reddish brown quadrate apical spot becomes indistinct, and the yellow cleft zone in it is prominent and continuous. In some individuals (fig. 20, left below 2♂♂) the apical spot is clearly defined, but yellow cleft zone is never overlaid with reddish brown scales as in *tecnessa*.
- 2) Hindwing, the markings are small and obsolete. Particularly discal series of spots are only faintly indicated except for the spot in space 7, while cell-end spot is clearly defined.

The underside markings as described above show close affinity with Javanse race, *kolleri*, but the new subspecies differs from the race in that on the forewing upperside black distal border continues somewhat along the dorsum forming well defined square projection at the tornus.

From Burmese race *stockleyi*, the new subspecies is easily distinguishable either by its broader black distal border on the upperside, or by the feature of the underside markings described above.

Length of forewings: 23–25 mm (♂)

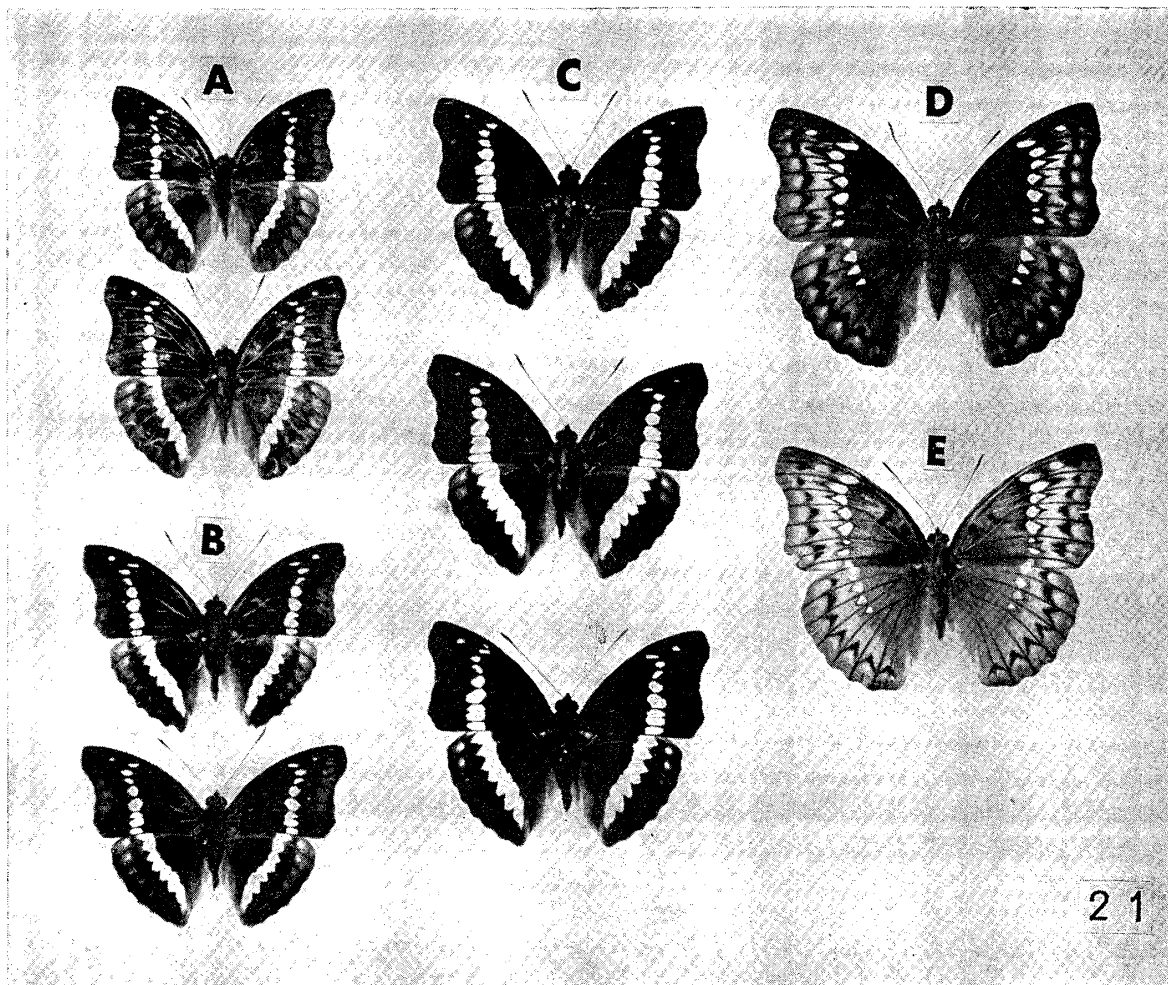
Holotype ♂, Langkawi Island, 12 May 1966, K. MORISHITA leg.

Paratypes 2♂♂, same data with the holotype; Paratypes 7 ♂♂, Langkawi Island, 10 May 1966, K. MORISHITA leg.

The male butterflies are fairly abundant on the shady forest path near North Coast of the Main Island, where I obtained them in some numbers, but I did not meet with the females.

The specimens of the race *tecnessa* figured for comparison were caught by me in May 1966 and partly in March 1964 at Perlis, "Kedawi", Selangor and Johore.

2. *Euthalia teuta rayana*, ssp. nov. (fig. 21-C, above, Holotype ♂; C, middle & below, Paratypes ♂♂; D, Paratype ♀) (fig. 21-A, ssp. *goodrichi* ♂♂, from Perak, Malaya proper; B, ssp. *goodrichi* ♂♂, from Perlis, "Kedawi"; E, ssp. *goodrichi* ♀, from Perlis, "Kedawi" for comparison)



This new subspecies is separable from the race *goodrichi* described from Perak, Malaya proper as follows:

♂♀. Considerably larger, i. e., 35-36 mm (♂), 44 mm (♀) in length of forewings, against 29-32 mm (♂), 41 mm (♀) in *goodrichi*.

♂. On the upperside yellowish white band is much broader, almost twice as broad as that of *goodrichi* found in Perak, type locality. On the underside yellowish brown tinge predominates and black submarginal spots are very prominent. Dark flecks are clearly indicated towards apex and tornus of the forewing and also in distal portion of the hindwing.

All these features give rise to a variegated look very different from pinkish grey underside of *goodrichi*.

♀. The upperside is considerably darker and the submarginal black undulate line is much broader. The pale lilac ornamentation in outer area of the forewing is rather limited. The white spots are slightly broader on the hindwing. On the underside pale yellowish brown tinge predominates as in ♂, with prominent black submarginal spots. The white band is broader.

From all other races the new subspecies is distinguishable in the regular and distally notched band of the male and also in peculiar female which has clear 4 white spots on the hindwing above.

Holotype ♂, Langkawi Island, 10 May 1966, K. MORISHITA leg.

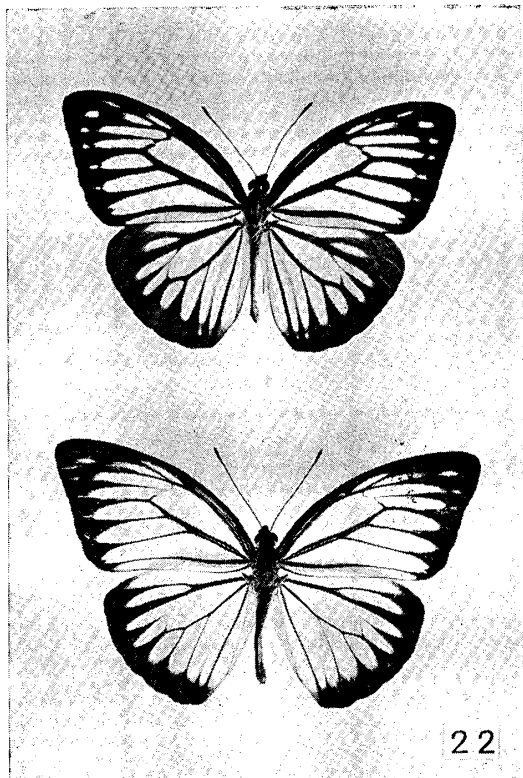
Paratypes ♂♂, Same data with the holotype; Langkawi Island, 12 May 1966, K. MORISHITA leg.; Paratype ♀, Langkawi Island, same data with the holotype.

The butterflies are not rare in the open forest near North Coast of the Main Island. Specimens of the race *goodrichi* figured for comparison were caught in May 1966 (Perlis) and June 1967 (Perak).

Part III A new overlap of races

1. Discovery of *Valeria valeria lutescens* in the Langkawi Islands

In the Islands the wide-spread Pierid species, *Valeria valeria* CRAMER is represented by the race *anais* (fig. 22, above ♂), which is very distinct from the Malayan race *lutescens* in both sexes. The butterflies were found commonly on open forest roads, but for their rapid flights I could obtain only 3 males. Curious enough, one male out of the three males obtained undoubtedly belongs to ssp. *lutescens*, the race found in Malaya proper.



This single male of *lutescens* form (fig. 22, below) was caught at North Coast of the Langkawi Island on 12th May 1966.

On this discovery thinkable cases will be as follows:

1) The male was a temporary migrant. 2) the race *lutescens* may have infiltrated into the territory of the race *anais*. 3) Each race originally belongs to the different species. That is, Indo-Burmese races including *anais*, may be distinct species from Malaysian races including *lutescens*.

Explanation of Figures

- Fig. 1. *Leptosia nina nina* FABRICIUS, ♂.
 Fig. 2. *Thaumantis klugius lucipor* WESTWOOD, ♀.
 Fig. 3. *Terinos terpander robertsia* BUTLER, ♂.
 Fig. 4. *Terinos clarissa malayana* FRUHSTORFER, ♂.
 Fig. 5. *Rhinopalpa polynice birmana* FRUHSTORFER, ♀.
 Fig. 6. *Neptis nata cresina* FRUHSTORFER, ♀.
 Fig. 7. *Parathuma nefte subrata* MOORE, ♀.
 Fig. 8. *Euthalia adonia beata* FRUHSTORFER, ♀.
 Fig. 9. *Polyura schreiberi tisamenus* FRUHSTORFER, ♀.
 Fig. 10. *Abisara savitri savitri* C. & R. FELDER, ♀.
 Fig. 11. *Curetis tagalica japa* FRUHSTORFER, ♂. (Underside).
 Fig. 12. *Zeltis amasa maximinianus* FRUHSTORFER, ♂.
 Fig. 13. *Marmessus rufotaenia rufotaenia* FRUHSTORFER, ♀. (Underside).
 Fig. 14. *Plastingia latoia latoia* HEWITSON, ♀.
 Fig. 15. *Erionota harmachis harmachis* HEWITSON, ♀.
 Fig. 16. *Oriens gola pseudolus* MABILLE, ♂.
 Fig. 17. *Eurema simulatrix littorea* MORISHITA, ♂. (Holotype)
 Fig. 18. Ditto, underside.
 Fig. 19. Left. *Eurema simulatrix littorea* MORISHITA, ♂. (Paratypes)
 Right. *Eurema simulatrix tecmessa* NICÉVILLE, ♂. (For comparison)
 Fig. 20. Undersides of Fig. 19.

- Fig. 21. A. *Euthalia teuta goodrichi* DISTANT, ♂. (Perak)
 B. Ditto, ♂. (Perlis, "Kedawi")
 C. *Euthalia teuta rayana* MORISHITA, ♂. (Holotype & Paratypes)
 D. Ditto, ♀. (Paratype)
 E. *Euthalia teuta goodrichi* DISTANT, ♀. (Perlis, "Kedawi")
 Fig. 22. Above, *Valeria valeria anais* LESSON, ♂. (Langkawi Islands)
 Below, *Valeria valeria lutescens* BUTLER, ♂. (Langkawi Islands)

ア オ タ テ ハ モ ド キ 卵 縦 条 数 の 変 異

白 水 隆・鈴 木 光

九州大学教養部生物学教室

タテハチョウ科の中でも、ヒオドシチョウ亜科、コムラサキ亜科、スミナガシ亜科、イシガケチョウ亜科などの卵には縦（上下）に顕著な縦条があり、その縦条数は卵による種の同定あるいは分類学的な特徴とし取りあげうる可能性があると思われるが、今まで十分な調査は行なわれていない。われわれはこの見地から材料入手の機会にできるだけその資料を蓄積することに努めているが、ここでは余白を利用してアオタテハモドキ *Precis orithya* LINNAEUS についての観察結果を記録しておきたい。

採卵に使用した1♀は沖永良部島知名町産、下川信幸氏が1968年8月11日に採集されたもので、久富敏弘氏の好意により8月17日に入手した。同日（8月17日）より直ちに産卵をはじめ、9月10日までの間に713卵を産んだが、その中から任意に抽出の257卵について卵縦条数を数えた結果は次の通りである。

卵縦条数	9	10	11	12	13	14	15
個 体 数	0	2	49	171	34	1	0

すなわち卵縦条数は10条より14条にわたる変異が認められたが、12条が最も多く（全体の67%弱）、この数を中心として典型的な変異曲線を示す数値がえられた。

なお卵縦条数について母蝶の産卵時期（同一母蝶の産卵したものでもその産卵の前期と後期）によって卵縦条数が異なるという報告が他の種であるので、この問題の真偽を検討するために産卵日を区別して調査した結果は次の通りである。

産卵日、調査卵数	卵 縦 条 数				
	10	11	12	13	14
8月17～20日 (111卵)	1	20	74	16	0
8月22日 (53卵)	0	8	43	2	0
8月23日 (50卵)	0	8	28	13	1
8月26日 (43卵)	1	13	26	3	0

すなわちアオタテハモドキの今回の材料では産卵の前後関係による卵縦条数の変化は認められなかった。